

HOMAG CNC Machining Center CENTATEQ N-500/510 V21 CON3R

The HOMAG CENTATEQ N-500/510 is an industrial machine designed primarily for nested based applications including routing and boring of panel stock. Materials can include woods, plastics, non-ferrous metals and composites.



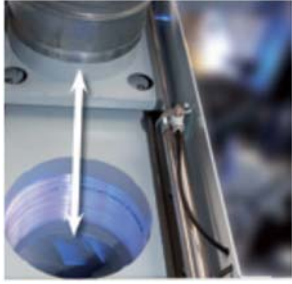
For illustration purposes only. Delivered machine may not be the same color or have the same markings as shown in the picture above.

HOMAG's reputation for quality remains unsurpassed, as noted by their ISO 9001 manufacturing certification and exceptional volume of machines in operation today. As such, HOMAG utilizes world class suppliers for procurement of critical machine components. In addition to utilizing superior components, the **woodWOP** programming software built into the machine is extremely strong and has proven itself on more than 30,000 installations worldwide. HOMAG's insistence on high quality industrial components paired with an established software interface deliver our customer's a machine that is stable, reliable and user friendly.

When a client's production requirements are greater than that of a standard manually loaded and off-loaded nesting machine, a few proven pieces of material handling automation can be utilized to increase the output of the basic machine by as much as 40%. This can be achieved without adding labor, running a second shift, or purchasing another machine. The Concept 3R throughfeed system detailed within this proposal is engineered to meet the higher output requirements of this portion of the nesting market while continuing to require only one operator.

The CENTATEQ N-500/510 is constructed on a tubular steel foundation engineered utilizing Finite Element Analysis and heavy steel gussets welded within to ensure stability. Unlike many in this machine class, the robust design and substantial mass provide a solid, vibration-free platform for the machining head.

The X, Y, and Z axes are all supported on THK style linear motion guides. THK style guides are engineered to produce straight line tracking at high travel speeds while providing outstanding stability in both the radial and lateral directions. The X/Y axes are driven by zero-backlash, pre-loaded helically ground rack and pinion gear systems. The Z axis is driven by high precision ball screw. Indramat solid state drives and digital AC servo motors are employed to power the axes.



Basic Machine

- Solid machine foundation provides the rigidity required for high speed gantry movements and machining operations.
- Gantry movable in X direction
- Cross support movable in Y and Z direction
- Direct chip extraction at the processing unit and separate connection for the extraction device (on site)
- Gantry enclosure
- Safety fence at the machine rear, right and left-hand side
- Light barriers for safety at the machine front
- Machine is pre-wired to accept remote operating pendant
- Machine frame is pre-configured to accept a gantry mounted push off device and additional material handling elements

Guide System and Drive Technique

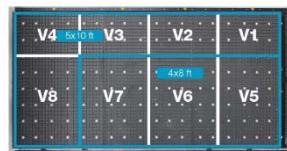
- High quality THK style linear guiding system
- Toothed rack assembly in the X/Y direction and ball bearing screw for movement in Z direction
- Digital drive technique in X, Y and Z direction featuring:
 - **Maintenance free motors with high resolution optical encoders ensuring precision accuracy**
 - **Digital drive control units guarantee high reliability**

MATRIX Table 5' x 10'

A grooved phenolic MATRIX vacuum system for holding down work pieces comes standard. The grooves provide for efficient distribution of vacuum, as well as isolating table areas by inlaying a rubber sealing and/or accepting vacuum pods for fixturing small parts.

The MATRIX system offers:

- Vacuum system for clamping of the work pieces on the surface of the vacuum table
- Can be equipped with optional Pod System for elevating parts
- Working table length: 3100 mm (10' / 122 Inches)
- Working table width: 1550 mm (5' / 61 Inches)
- Workpiece thickness: maximum 100 mm (3.94 Inches)
 - **Includes rubber gasket material**



PRO+ Matrix Table – 8 Vacuum Fields

By dividing the matrix table into 4 zones, reading the raw material size of the incoming program and automatically concentrating vacuum pressure to the correct area of the machine, the PRO+ solution is perfectly suited to handle the raw material variance of today's multi-faceted manufacturers. The machine is able to automatically create 4 optimized vacuum zones: **4'x8'**, **4'x10'**, **5'x8'** and **5'x10'**. The vacuum fields that create zones A1 and A2 can also be semi-automatically selected at the machine control

Note: fixture board material (also referred to as “bleeder board” or “spoil board”) is not supplied with the machine but is required at time of installation.



Vacuum System

- The machine specification includes (2) two vacuum pumps with a total vacuum capacity of 690 m³/h, 60 Hz. They are directly connected with the matrix table via a distribution device and dual-plenum vacuum delivery system. One of the two pumps serves as master, while the other is commanded via the machines **on-demand vacuum functionality**.
- Efficient, quiet, low maintenance vacuum generation via contactless “rotary claw” technology.
- The vacuum system is one of the largest electrical consumers of any manufacturer’s machine. For this reason, the CENTATEQ N-Series system utilizes an **Eco-Friendly** design to conserve energy and on electrical costs.



Vertical Router Spindle – Rated at 13.4 HP

- BENZ HSK63 spindle motor that includes an automatic tool change feature in combination with the tool change magazine.
- Direction of rotation: right hand / left hand
- Speed: 1,500 - 24,000 rpm stepless programmable
- Drive: frequency controlled to a maximum capacity at the tool: up to 8.5/10kW (11.4/13.4 HP) in continuous and intermittent operation (S1/S6 - 50%)
- Spindle lubrication: permanent grease lubrication
- Bearing: hybrid bearing (ceramic), little friction, higher stiffness and maximum operating life
- Fan cooled
- Central dust extraction



Aggregate Interface Interpolating C-Axis

Provides ability for the spindle to accept adapter aggregates. Includes interface pneumatics and rotatable drive gear for aggregates with HOMAG 3-point torque support. Provides infinitely variable swivel range of 360°. Aggregates are not included but are available as options.

Extension Aggregate Interface C-Axis for Flex5 Unit

Includes coupling element for the C-Axis to be able to accept and tool change the Flex5 unit. This aggregate allows for positional processing with a 5th axis, on a 4-axis machine. Common applications are sawing, routing and drilling. The Flex5 aggregate is not included, but available as an option.

Multi-Zone Processing

The table and control interface on the CENTATEQ N-500 machine is configured to allow the operator to simultaneously load multiple programs at up to four (4) zero points of the machine (number of zero points determined during machine specification). The machine can then optimize drilling and routing routines and run the multiple programs as a single file.

This is an important feature for those who may use the CENTATEQ N-500 machine as a “point to point” machining center or provide back-up to that style machine already in operation on their shop floor. Customers who run 5’ x 5’ raw materials (Birch Plywood for example) also like the feature because they can run two sheets of raw material side by side in a single machine cycle.

FLEX5
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Air Jet Agitation

Four flexible air jets are integrated into the extraction hood providing a cool, clean and efficient machining area. Air jets are activated via soft key at the control panel.

Automatic Tool Changer

To increase flexibility and decrease cycle time, an automatic, rotary tool changer is arranged near the rear right of the machine framework.

Features:

- **Tool holder: HSK63**
- **Magazine places: 14 tool places**
- **Tool weight: maximum 6 kg (13.22 lbs) including HSK cone**
- **Tool diameter: 130 mm max when equipped with 14 tools**
- **Tool change time: approximately 10 - 18 seconds**

Automatic Tool Loading Position

The CENTATEQ N-500 provides a single point of interaction for loading and unloading the tool changer. Operator efficiency is increased by allowing the machine to take some of the responsibility for managing tooling. Tools are manually inserted into the loading device, positioned close to the left front of the machine for easy access. The machine retrieves the tool and selects the first available position in the tool magazine, deposits the tool, and updates the tool database.

The system has proven an effective method for minimizing tool and machine damage caused by errant manual loading of tools into the machine and/or incorrect entering of data into the machine control. The process is reversed for removing tools from the machine; the machine deposits tools in the loading position and automatically removes the tool from the active tool database. The loading position also utilizes a sensor to prevent the machine from depositing a tool in the position while another tool is present.

Tool Length Control

A heavy-duty tool length control system is a standard feature of the machine. To maintain accuracy, tooling is touched off after a change via the tool pick-up station and its length is verified against the tool data stored within the machine control.





21-Spindle Vertical Drill Block

- A vertical drilling block with twenty-one (21) spindles is included. The unit is carried on an additional (second) z-axis support separate from the main spindle
- Special feature: Spindle clamping to achieve the drilling depth safely.
- Stroke Z-direction: 60 mm
- Drilling depth: maximum 38 mm (up to 55 mm for special borers)
- Direction of rotation: right hand/left hand
- Variable Speed: 1,500 - 7,500 rpm
- Power: 2.3 kW
- Shaft diameter: $d = 10 \text{ mm}$
- Total length of drill: 70 mm
- Drilling diameter: maximum 35 mm
- Distance between spindles: 32 mm
- Type of spindle: individually selectable
- Spindle Arrangement: X-9 spindles, Y-12 spindles
- Free spaces to allow for integration of horizontal drills and grooving saw unit.

Pneumatic Side Reference Fences and Locating Pins

Supplementing the pneumatic reference pins delivered within our standard machine configuration, full length solid fences serve as the means for locating materials to the working zones of the machine. Paired with a pneumatic reference pin located at the front right and rear right of the machine, the system offers two “zero” points for accurately locating raw materials. Fences retract during machining. When the finished nest is ejected, the fences are raised again to help guide parts from the machine table to the transfer conveyor at the end of the machine. Both the fences and the pins are under down stroke surveillance to prevent the machine from routing a fence or pin in the event of an incomplete cycle

Automatic Loading Device for Raw Boards

The machine is equipped with a gantry mounted vacuum loading apparatus for automatically loading non-permeable materials to the machine from a stack of material positioned on a scissor lift at the left of the machine. Working in conjunction with an intermediary section of roller conveyor, the side fences noted above, and a sensor in the guide area, the machine is able to automatically load itself, and accurately position the raw sheet for the start of the machining cycle.

Porous Materials Loading Features

Consistent with HOMAG’s reputation in the marketplace, the attention to detail in the Concept 3R loading system design from HOMAG is second to none. In addition to the industrial load/locate features of the HOMAG system, we have also paid a great deal attention to the machines ability to load and locate porous materials. This is a challenge not considered by many customers until machines have been delivered. The HOMAG system utilizes two 10” diameter Schmalz vacuum cups integrated with both vacuum and compressed air. Blowing the proper amount compressed air through porous raw materials during the loading cycle allows the machine to retrieve the raw material without picking up more than one sheet. The vacuum grippers can also be setup to peel the raw sheet from the bunk and also shake the sheet prior to loading to ensure not more than one sheet is being loaded to the machine table (from vacuum bleed thorough or static between sheets).



Positioning of Raw Material for Automatic Loading

Positioning of the raw board delivered by the STORETEQ gantry will be received and positioned for the router loading device by powered roller table.

Pre-Labeling of Raw Boards

Barcode Printer and Automated labeling system. The label unit allows for fully automated labeling of work pieces prior to the machining of the nest.

The system consists of an industrial cantilever traveling in the X and Y over the lift on the front end of the through feed system.

- Thermo direct and thermo transfer printer
- Interface: 1 x Ethernet
- Graphics capability
- Label size: 80mm x 80mm, 3"x3", 4"x4"
- Ability to print in 90-degree rotations on symmetrical labels
- Automatic re-winding of the carrier paper
- Pneumatically operated transfer/seal stamp
- Packing of the label rolls:
 - Maximum roller diameter: 240mm
 - Roller core diameter: 76mm
 - Inner winding

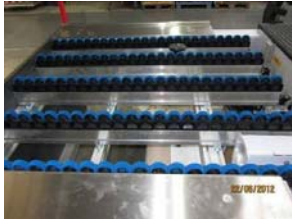
Labels

One (1) case, containing four (4) rolls of labels of 80mm x 80mm thermal transfer labels will be supplied with the machine. The labels carry a semi-permanent adhesive, which is tackier than a removable adhesive, which provides the label the ability to remain on the part through the machining process. This label remains removable unless it is left on and/or compressed for a couple days. Both removable, and ultra-removable labels are available for the system.

Software Printer Control woodPrint

The machine control is prepared for the connection of a printer compatible with a Windows GDI printer driver and non-mirrored Nests generated in Cut Rite Nesting. When starting a nest generated in Cut Rite Nesting, woodPrint automatically prints the labels for the single parts contained within the nest. The printing data for the labels will then be provided from the Cut Rite Nesting. Label layout is also generated in Cut Rite Nesting.

If Cut Rite Nesting is not purchased, an alternate third-party design/nesting software is to be provided by the customer and a different printer control interface will need to be discussed/purchased.



Intermediary Roller Conveyor

Once material is retrieved from the roller table by the machine, it is carried across a section of roller conveyor complete with protection to prevent scratching of the raw materials.

Automated Push-Off of Finished Nests

The system utilizes a gantry mounted push-off device to automatically eject finished parts from the machine table without manual operator intervention. Once the nest is complete, the machine returns to the loading side of the machine, drops its push-off device and cycles from left to right, collecting finished parts and waste along the way. The unit also contains a table cleaning sweep integrated into the push-off to clean dust and debris from the spoilboard in preparation for the next raw board. ***The height of the push off device is servo driven and established via the machine control.***

Simultaneous Onload and Offload

To further increase the efficiency of the system, the machine is able to utilize a simultaneous onload and offload feature, effectively unloading the finished nest, cleaning the spoilboard, and loading the next raw sheet in a single cycle.

Dust Extraction from Below

A bottom dust collection channel with blast gate is integrated into the machine frame to collect dust from the nest as the parts are ejected from the machine. As the vacuum from the table competes with the dust collection for the waste, some dust will remain in the cut. The dust collection channel from below collects this dust as the parts are pushed from the machine and onto the transfer conveyor. This feature ultimately leaves less mess to manually clean at the end of a shift.

Transfer Conveyor

A conveyor belt receives the finished parts and automatically advances them to the operator for sorting at the end of the table via communication with photo-electric sensors. This allows the machine to process parts while the operator is unloading the previous nest and prevents parts from being pushed off onto the floor if the operator is not present to receive them. Minimum recommended part thickness for consistent part conveyance is 12mm (1/2").

Dust Collection from Above

The transfer table is also integrated with a dust collection hood from above to clean residual dust from the top of the work pieces and the conveyor belt. This small feature proves very valuable for those applying barcode labels or other methods of identifying parts coming from the router, as the parts are free from much of the dust and debris of the machining process.





powerControl with powerTouch

The CENTATEQ N-500 Series features a Microsoft Windows based state of the art **powerTouch** control complete with intuitive software. The included **woodWOP 7** programming system is the heart of the machine and is unmatched by any programming software available with a machine today. The powerful drawing functions offered by **woodWOP 7** simplify programming for operators without CNC experience and provide the premium features required to satisfy advanced users. In addition to the software within the machine control, a copy of the program is included for installation on an office PC for off-line programming.

Hardware:

- Full HD wide screen multi-touch display, keyboard, mouse and an industrial PC
- Operating system Windows 10 (US)
- PLC control according to international standard IEC 61131
- USB connection at the operating panel
- EtherNet connection 10/100 MBIT RJ45 (without switch)
- UPS (Uninterruptable Power Supply)

Hand Control Pendant:

Remote terminal featuring an E-stop, as well as manual control of feed speed, machine axes and dust hood.

powerControl software package with graphical operating programs:

- **woodWOP 7** for powerful, yet simple generation of CNC-programs
 - Graphical tool selection from your database
 - Production list administration
 - Graphical presentation of work zones
 - Clear text error messaging
- 3D NC-Simulation and Time Calculation: One (1) license

powerControl CNC-Core Includes:

- Path control in all axis and parallel sequences by multi-channel technology
- Look-ahead-function for optimal speed at the transitions

powerControl with powerTouch (continued)

Software for External PC - Single Seat Licenses for the Following Programs:

Requires computer operating Windows 7, 8, or 10

- **woodWOP 7** for powerful, yet simple generation of CNC-programs
 - Import of 2D-DXF-files via pre-determined layering rules
 - Display of geometry, layer and drawing elements
 - Generation of woodWOP program files
- **MMR Basic** for machine data recording
- **woodNest Basic**
 - Software for the Nesting of woodWOP program files
 - Manual positioning and turning of work pieces by drag and drop
 - Visualization of spacing between work pieces
- **woodWOP MOSAIC**
 - Software to view thumbnails of woodWOP files
 - Allows woodWOP data files and complete directories to be managed from a graphical point of view
 - Programs can be administered by drag and drop

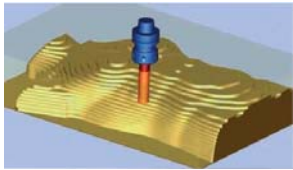
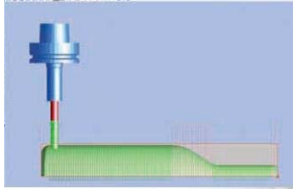
tapio enabled machine control

tapio is the world's first digital platform designed to coordinate the entire value chain of the wood industry. From production and processes to marketing and data flow, everything you need to be successful is now centralized in one easy-to-use platform designed to dramatically increase efficiency and productivity.

Whether you run a small shop or a global corporation, **tapio** is your digital solution to take your business to the next level.

For more information, visit www.tapio.one/en

tapio



intelliDivide Nesting

intelliDivide Nesting is a web-based optimization platform for HOMAG Nested Based Routers. Its focus is to provide an effective and flexible Nesting platform for customers working within the HOMAG woodWOP ecosystem

- Access from tablet, PC, or laptop
- From the office, the shop floor, or even from home
- Block and True Shape Nesting
- Increase board yield
- Calculates nesting data (# boards, % yield, estimated processing time, etc.)
- Consideration for grain
- Import pre-existing .MPR files or .CSV lists of raw parts. .MPR files must contain nesting contours to be valid
- Subscription based service:
- Available within the tapio shop when you need it, always current, no upgrades



EnRoute

EnRoute Complete is the go-to CNC software for creative design applications. Its CAD/CAM design functionality provides a unique combination of 2D/3D design and toolpath capabilities for HOMAG CNC routers. The software is great for the customer looking beyond cabinet software capability.

- Signage
- V-Groove Carving
- Textured Wall Panels
- 3D Reliefs and Toolpaths
- Rapid Picture Technology
- Flexible File Import and Cleanup
- True Shape Nesting for optimized cutting

Subscription based service: Available when you need it, always current, no upgrades required
90 day trial subscription included with machine purchase. Activation, tech support, and future subscription services coordinated directly by EnRoute

Stiles CNC Digital Solutions Options

Find the Right Digital Solution for You

Digital Solution	Standard	Push-Off (some automation)	Concept 2/3
intelliDivide Nesting I need help nesting for my CNC or optimizing cutting patterns.	X	X	
materialManager How can I track board inventory?	X	X	
DataSave Back-up Machine Production and Parameter Data	X	X	X
productionAnalyzer (MMR Mobile) I would like to know if my machinery is running efficiently.	X	X	X
MachineBoard Monitor Machines in Real Time	X	X	X
ServiceBoard I need help with managing machine maintenance.	X	X	X
productionAssist Nesting I need an entry-level part identifying and labeling solution	X	X	
Cut Rite Nesting I need help identifying and labeling processed workpieces	X	X	X

Want to Learn More or Need Help Discovering What's Right for You?
Please visit www.stilesdigital.com or email info@stilesmachinery.com

HOMAG Automation STORETEQ Connection

Software Components:

- Communication interface between surface storage STORETEQ and machine control of the HOMAG nesting machine. When loading the machine by means of the loading portal, the STORETEQ storage provides program data and loads them onto the nesting machine.
- PLC feeding table connection / machine table or roller conveyor. After being fed by means of the STORETEQ surface storage the feeding table of the nesting machine is locked against the storage and released only after processing of the nest has been completed.
- Emergency-off interlinking of HOMAG Group machines

Material/labor modifications, upgrades, etc. to existing STORETEQ systems (if required) to provide for the integration of additional machines are not included within the context of this single machine proposal.

Manuals and Control Texts

- Standard Manuals, as well as .PDF version stored on the machine containing operating and maintenance instructions
- Display texts for machine operators of the powerControl
- Spare parts descriptions and wiring diagrams

Workforce Development

A well-trained workforce is essential to realizing the full capabilities of HOMAG equipment. Stiles University, the industry's only nationally-accredited training program, is proud to offer a variety of learning opportunities to promote safe and efficient machine operation, increase component and tooling life, and reduce maintenance costs.

The following learning opportunities are included with this machine purchase:

- One (1) 30-day trial license to **CNC100: Introduction to woodWOP Programming** (online)*
- One (1) scholarship for an in-person woodWOP programming and machine operation course (CNC210, CNC220, or CNC230)

*Completion of CNC100 serves as a prerequisite for machine shipment.

To explore the recommended CNC learning path for this machine, view and enroll in upcoming sessions, or activate online course access, visit **www.stilesuniversity.com** or contact **classes@stilesmachinery.com** for more information.

Technical Specifications



HSK 63 Router Spindle Power	10 kW/13.4 HP
Router Spindle Speed	1,250 – 24,000 rpm
Tool Magazine Capacity	14
Pneumatic Reference	2 fences and 2 pins
Vacuum Pump Capacity	2 Pumps w/ total capacity 690 m³/h
Working Length	3100 mm/122"
Working Width	1550 mm/61"
Max. L x W for Automatic Push Off	3100 mm x 1525 mm
Min. L x W for Automatic Load	1500 mm x 800 mm
Recommended Panel Weight for Automatic Load / Unload	≤100 KG
Maximum Workpiece Thickness	100 mm / 60 mm for auto load/unload
Axis Stroke/Positioning Speeds	
Z-Axis Router	348 mm/13.7"
Z-Axis Drill Block	215 mm/8.5"
X/Y/Z Vector Speed	96/96/25 m/min
Approx. Machine Weight	8,300 lbs.

Utility Requirements

Electrical	
Operating Voltage	480 Volts / 3 Phase / 60 Hz
Amperage Service	63 Amps @ 480 Volts
Control Voltage	24 Volt
Total Connected Load	31 kW
Dust Extraction	
Main Connection Size	(2) 200 mm, (1) 160 mm, (2) 140 mm
Air Velocity (minimum)	28 m/sec - 92 ft/sec
Static Pressure	Minimum 2200 Pascal
Minimum Air Volume	8300 m³/h – 4885 cfm
Compressed Air	
Connection Size(s)	R ½ inch
Pressure Required	100 psi – 7 bar
Consumption Volume	1500 NL/min
Ambient Temperature	
Operating Range	35° C (max) - 95° F (max)
Foundation Requirement	
Concrete Thickness	200 mm (min.) – 8 inch (min.)

Voltage supplied must not fluctuate in excess of +/- 5% of its stated value. Voltage must be balanced phase-to-phase and phase-to-ground.

Note: The stated values are only applicable to the machine as specified. Adding or deleting optional equipment may change service connection requirements.